

11-30-04

cgc



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No. : 09/977,137
 Applicant : Summers et al.
 Filed : October 12, 2001
 Title : Metal Binding Proteins, Recombinant Host Cells and Methods
 Patent No. : 6,750,042
 Issue Date : June 15, 2004
 Docket No. : 79-00

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as Express Mail in an envelope addressed to: Mail Stop Certificate of Corrections Branch, Hon. Commissioner for Patents, PO Box 1450, Alexandria VA 22313-1450 EV 584 577 828 US

29 Nov 04 *Kay Speaker*
 Date Kay Speaker

REQUEST FOR CERTIFICATE OF CORRECTION

Hon. Commissioner for Patents
 P.O. Box 1450
 Alexandria, VA 22313-1450

Certificate
 DEC 02 2004
 of Correction

Sir:

A Certificate of Correction for U.S. Patent 6,750,042 B2, issued June 15, 2004, is respectfully requested as the printed patent contains errors that affect the clarity of the patent.

Two copies of PTO form 1050 are enclosed herewith listing the corrections requested. These corrections are discussed in detail below. No new matter has been added.

On the second page of the patent, under the continued list of "OTHER PUBLICATIONS" of section (56) References Cited, please add the following references:

Selifonova, O. et al., "Bioluminescent Sensors for Detection of Bioavailable Hg(II) in the Environment" (Sept. 1993) Applied and Environmental Microbiology **59**(9):3083-3090.

Shewchuk, L.M. et al., "Transcriptional Switching by the MerR Protein: Activation and Repression Mutants Implicate Distinct DNA and Mercury(II) Binding Domains" (1989) Biochemistry **28**(5): 2340-2344.

Shewchuk, L.M. al., "Transcriptional Switching by the Metalloregulatory MerR Protein: Initial Characterization of DNA and Mercury(II) Binding Activities" (1989) Biochemistry **28**(5):2331-2339.

8 DEC 2004

Steele, R.A., and Opella, S.J., "Structures of the Reduced and Mercury-Bound Forms of MerP, the Periplasmic Protein from the Bacterial Mercury Detoxification System" (1997) *Biochemistry* **36**(23):6885-6895.

Summers, A.O., "Untwist and Shout: a Heavy Metal-Responsive Transcriptional Regulator" (May 1992) *J. Bacteriol.* **174**(10):3097-3101.

Utschig, L.M. et al., "Mercury-199 NMR of the Metal Receptor Site in MerR and Its Protein-DNA Complex" (April 1995) *Science* **268**:380-385.

Utschig, L.M. et al., "Biochemical and Spectroscopic Probes of Mercury(II) Coordination Environments in Proteins" (1993) *Methods Enzymol.* **226**:71-97.

Veglia, G. et al., "The Structure of the Metal-Binding Motif GMTCAAC Is Similar in an 18-Residue Linear Peptide and the Mercury Binding Protein MerP" (March 2000) *J. Am. Chem. Soc.* **122**(10):2389-2390.

Wright, J.G. et al., "Coordination Chemistry of the Hg-MerR Metalloregulatory Protein: Evidence for a Novel Tridentate Hg-Cysteine Receptor Site" (1990) *J. Am. Chem. Soc.* **112**:2434-2435.

Zeng, Q. et al., "The Core Metal-Recognition Domain of MerR" (1998) *Biochemistry* **37**(45):15885-15895.

Kulkarni, R.D. and Summers, A.O., "MerR Cross-Links to the α , β , and σ^{70} Subunits of RNA Polymerase in the Preinitiation Complex at the *mer* TPCAD Promoter" (March 1999) *Biochemistry* **38**(11):3362-3368.

These references were considered by the Examiner but were not included in the printed patent. Enclosed is a copy of the 1449 form initialed by the Examiner showing that the above references were considered.

It is believed that no fee is required with this submission as the omissions are the result of a mistake by the Patent Office. If a fee is required, please charge any deficiency or credit any overpayment to Deposit Account No. 07-1969.

Respectfully submitted,



Michael J. Curtis
Reg. No. 54,053
Customer No. 23713

GREENLEE, WINNER AND SULLIVAN, P.C.
4875 Pearl East Circle, Suite 200
Boulder, CO 80301
Phone: (303) 499-8080; FAX: (303) 499-8089
Email: Winner@Greenwin.com
Attorney Docket No. 79-00
ks: November 29, 2004

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 6,750,042 B2

DATED : June 15, 2004

INVENTOR(S) : Summers et al.

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

On page 2 of the patent, under the continuation of "OTHER PUBLICATIONS" of section (56) References Cited, insert the following references:

-- Selifonova, O. et al., "Bioluminescent Sensors for Detection of Bioavailable Hg(II) in the Environment" (Sept. 1993) *Applied and Environmental Microbiology* **59**(9):3083-3090.

Shewchuk, L.M. et al., "Transcriptional Switching by the MerR Protein: Activation and Repression Mutants Implicate Distinct DNA and Mercury(II) Binding Domains" (1989) *Biochemistry* **28**(5): 2340-2344.

Shewchuk, L.M. et al., "Transcriptional Switching by the Metalloregulatory MerR Protein: Initial Characterization of DNA and Mercury(II) Binding Activities" (1989) *Biochemistry* **28**(5):2331-2339.

Steele, R.A., and Opella, S.J., "Structures of the Reduced and Mercury-Bound Forms of MerP, the Periplasmic Protein from the Bacterial Mercury Detoxification System" (1997) *Biochemistry* **36**(23):6885-6895.

Summers, A.O., "Untwist and Shout: a Heavy Metal-Responsive Transcriptional Regulator" (May 1992) *J. Bacteriol.* **174**(10):3097-3101.

Utschig, L.M. et al., "Mercury-199 NMR of the Metal Receptor Site in MerR and Its Protein-DNA Complex" (April 1995) *Science* **268**:380-385.

Utschig, L.M. et al., "Biochemical and Spectroscopic Probes of Mercury(II) Coordination Environments in Proteins" (1993) *Methods Enzymol.* **226**:71-97.

Veglia, G. et al., "The Structure of the Metal-Binding Motif GMTCAAC Is Similar in an 18-Residue Linear Peptide and the Mercury Binding Protein MerP" (March 2000) *J. Am. Chem. Soc.* **122**(10):2389-2390.

Wright, J.G. et al., "Coordination Chemistry of the Hg-MerR Metalloregulatory Protein: Evidence for a Novel Tridentate Hg-Cysteine Receptor Site" (1990) *J. Am. Chem. Soc.* **112**:2434-2435.

Zeng, Q. et al., "The Core Metal-Recognition Domain of MerR" (1998) *Biochemistry* **37**(45):15885-15895.

Kulkarni, R.D. and Summers, A.O., "MerR Cross-Links to the α , β , and σ^{70} Subunits of RNA Polymerase in the Preinitiation Complex at the *mer* TPCAD Promoter" (March 1999) *Biochemistry* **38**(11):3362-3368.--

MAILING ADDRESS OF SENDER:

PATENT NO. US 6,750,042 B2

GREENLEE, WINNER and SULLIVAN, P.C.
4875 Pearl East Circle, Suite 200
Boulder, CO 80301
Phone: (303) 499-8080
Fax: (303) 499-8089
email: winner@greenwin.com

No. of add'l copies
@ \$.30 per page 10

FORM PTO 1050 (REV. 3-82)

8 DEC 2004

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 6,750,042 B2

DATED : June 15, 2004

INVENTOR(S) : Summers et al.

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

On page 2 of the patent, under the continuation of "OTHER PUBLICATIONS" of section (56) References Cited, insert the following references:

-- Selifonova, O. et al., "Bioluminescent Sensors for Detection of Bioavailable Hg(II) in the Environment" (Sept. 1993) *Applied and Environmental Microbiology* **59**(9):3083-3090.

Shewchuk, L.M. et al., "Transcriptional Switching by the MerR Protein: Activation and Repression Mutants Implicate Distinct DNA and Mercury(II) Binding Domains" (1989) *Biochemistry* **28**(5): 2340-2344.

Shewchuk, L.M. al., "Transcriptional Switching by the Metalloregulatory MerR Protein: Initial Characterization of DNA and Mercury(II) Binding Activities" (1989) *Biochemistry* **28**(5):2331-2339.

Steele, R.A., and Opella, S.J., "Structures of the Reduced and Mercury-Bound Forms of MerP, the Periplasmic Protein from the Bacterial Mercury Detoxification System" (1997) *Biochemistry* **36**(23):6885-6895.

Summers, A.O., "Untwist and Shout: a Heavy Metal-Responsive Transcriptional Regulator" (May 1992) *J. Bacteriol.* **174**(10):3097-3101.

Utschig, L.M. et al., "Mercury-199 NMR of the Metal Receptor Site in MerR and Its Protein-DNA Complex" (April 1995) *Science* **268**:380-385.

Utschig, L.M. et al., "Biochemical and Spectroscopic Probes of Mercury(II) Coordination Environments in Proteins" (1993) *Methods Enzymol.* **226**:71-97.

Veglia, G. et al., "The Structure of the Metal-Binding Motif GMTCAAC Is Similar in an 18-Residue Linear Peptide and the Mercury Binding Protein MerP" (March 2000) *J. Am. Chem. Soc.* **122**(10):2389-2390.

Wright, J.G. et al., "Coordination Chemistry of the Hg-MerR Metalloregulatory Protein: Evidence for a Novel Tridentate Hg-Cysteine Receptor Site" (1990) *J. Am. Chem. Soc.* **112**:2434-2435.

Zeng, Q. et al., "The Core Metal-Recognition Domain of MerR" (1998) *Biochemistry* **37**(45):15885-15895.

Kulkarni, R.D. and Summers, A.O., "MerR Cross-Links to the α , β , and σ^{70} Subunits of RNA Polymerase in the Preinitiation Complex at the *mer* TPCAD Promoter" (March 1999) *Biochemistry* **38**(11):3362-3368.--

MAILING ADDRESS OF SENDER:

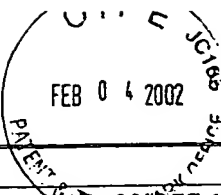
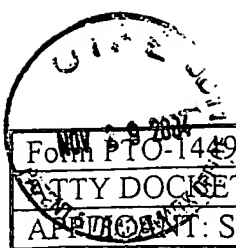
PATENT NO. US 6,750,042 B2

GREENLEE, WINNER and SULLIVAN, P.C.
4875 Pearl East Circle, Suite 200
Boulder, CO 80301
Phone: (303) 499-8080
Fax: (303) 499-8089
email: winner@greenwin.com

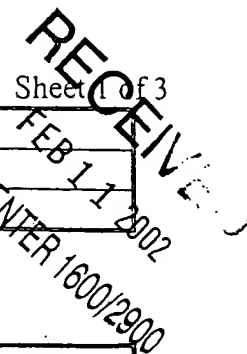
No. of add'l copies
@ \$.30 per page 10

FORM PTO 1050 (REV. 3-82)

8 DEC 2004



Application



Form PTO-1449

ATTY DOCKET NO. 79-00

SERIAL NO. 09/977,137

FILING DATE: 10/12/98

APPLICANT: Summers and Caguiat

GROUP: 1653/6.38

U.S. PATENT DOCUMENTS

Exmr. Initial		Document Number	Date	Name	Class	Subclass	Filing Date if Appropriate
MAI	1	5,506,121	04/09/96	Skerra et al.	435	69.7	

FOREIGN PATENT DOCUMENTS

		Document Number	Date	Country	Class	Subclass	Translation Yes/No

OTHER PRIOR ART (including Author, Title, Date, Pertinent Pages, etc.)

MAI	2	Boulanger, Y. et al., "Model for mammalian metallothionein structure" (March 1983) Proc. Natl. Acad. Sci. USA 80:1501-1505
	3	Brennan, R.G. and Matthews, B.W., "The Helix-Turn-Helix DNA Binding Motif" (February 5, 1989) J. Biol. Chem. 264(4):1903-1906
	4	Caguiat, J.J. et al., "Cd(II)-Responsive and Constitutive Mutants Implicate a Novel Domain in MerR" (June 1999) J. Bacteriol. 181(11):3462-3471
	5	Caguiat, J.J. and Summers, A.O., "Single Residue Changes Confer an Enhanced Response by MerR to Cd(II)" Abstracts of the General Meeting of the American Society for Microbiology (1998) 98p278
	6	Comess, K.L. et al., "Construction of a Synthetic Gene for the Metalloregulatory Protein MerR and Analysis of Regionally Mutated Proteins for Transcriptional Regulation" (1994) Biochemistry 33(14):4175-4186
	7	Engst, S. and Miller S. M., "Alternative Routes for Entry of HgX ₂ into the Active Site of Mercuric Ion Reductase Depend on the Nature of the X Ligands" (March 1999) Biochemistry 38(12):3519-3529
	8	Furey, W.F. et al., "Crystal Structure of Cd,Zn Metallothionein" (1986) Science 231:704-708
	9	GenBank, Accession No. P07044 (April 1, 1988)
MAI	10	Godwin, H.A. and Berg, J.M., "A Fluorescent Zinc Probe Based on Metal-Induced Peptide Folding" (1996) J. Am. Chem. Soc. 118(27):6514-6515

Form PTO-449	Sheet 2 of 3	
ATTY DOC NO. 7500	SERIAL NO. 09/977,137	FILING DATE: 10/2/01
APPLICANT: Summers and Caguiat		GROUP: 1633/1638

MAI	11	Helmann, J. D. et al., "The MerR Metalloregulatory Protein Binds Mercuric Ion as Tricoordinate, Metal-Bridged Dimer" (1990) Science 247:946-948
	12	Heltzel, A. et al., "Activator-Dependent Preinduction Binding of σ -70 RNA Polymerase at the Metal-Regulated <i>mer</i> Promoter" (1990) Biochemistry 29:9572-9584
	13	Kulkarni, R.D. and Summers, A.O., "MerR Cross-Links to the $\alpha\beta$, and σ^{70} Subunits of RNA Polymerase in the Preinitiation Complex at the <i>mer</i> TPCAD Promoter" (March 1999) Biochemistry 38(11):3362-3368
	14	Kulkarni, R.D. and Summers, A. O., "Architecture of RNA polymerase-MerR-Hg(II) complexes at the <i>mer</i> operator-promoter region as revealed by protein-protein crosslinking." (1998) Abstracts of the General Meeting of the American Society for Microbiology 98p278
	15	Livrelli, V. et al., "In Vivo DNA-Protein Interactions at the Divergent Mercury Resistance (<i>mer</i>) Promoters" (February 1993) J. Biol. Chem. 268(4):2623-2631
	16	Miller, S.M. et al., "Communication between the Active Sites in Dimeric Mercuric Ion Reductase: An Alternating Sites Hypothesis for Catalysis" (1991) Biochemistry 30(10):2600-2612
	17	Miller, S.M. et al., "Two-electron Reduced Mercuric Reductase Binds Hg(II) to the Active Site Dithiol but Does Not Catalyze Hg(II) Reduction" (June 1986) J. of Biol. Chem. 261(18):8081-8084
	18	Moore, M.J. et al., "C-Terminal Cysteines of Tn501 Mercuric Ion Reductase" (1992) Biochemistry 31(6):1677-1685
	19	O'Halloran, T.V., "Transition Metals in Control of Gene Expression" (August 1993) Science 261:715-725
	20	Ralston, D.M. et al., "Ultrasensitivity and heavy-metal selectivity of the allosterically modulated MerR transcription Complex" (May 1990) Proc. Natl. Acad. Sci. USA 87:3846-3850
	21	Ross, W. et al., "Genetic Analysis of Transcriptional Activation and Repression in the Tn21 <i>mer</i> Operon" (July 1989) J. Bacteriol. 171:4009-4018
MAI	22	Santos, R.A. et al., "Solid-State ^{199}Hg and ^{113}Cd NMR Studies of Mercury- and Cadmium-Thiolate Complexes. Spectroscopic Models for $[\text{Hg}(\text{Scys})_n]$ Centers in the Bacterial Mercury Resistance Proteins" (1991) J. Am. Chem. Soc. 113(2):469-474

NOV 29 2004

FEB 04 2002

Form PTO-1019

Sheet 3 of 3

ATTY DOCKET NO. 79-00

SERIAL NO. 09/973,137

FILING DATE: 10/12/01

APPLICANT: Summers and Caguiat

GROUP: 15316358

MAI	23	Selifonova, O. et al., "Bioluminescent Sensors for Detection of Bioavailable Hg(II) in the Environment" (Sept. 1993) Applied and Environmental Microbiology 59:3083-3090
	24	Shewchuk, L.M. et al., "Transcriptional Switching by the MerR Protein: Activation and Repression Mutants Implicate Distinct DNA and Mercury(II) Binding Domains" (1989) Biochemistry 28(5): 2340-2344
	25	Shewchuk, L.M. al., "Transcriptional Switching by the Metalloregulatory MerR Protein: Initial Characterization of DNA and Mercury(II) Binding Activities" (1989) Biochemistry 28(5):2331-2339
	26	Steele, R.A., and Opella, S.J., "Structures of the Reduced and Mercury-Bound Forms of MerP, the Periplasmic Protein from the Bacterial Mercury Detoxification System" (1997) Biochemistry 36(23):6885-6895
	27	Summers, A.O., "Untwist and Shout: a Heavy Metal-Responsive Transcriptional Regulator" (May 1992) J. Bacteriol. 174(10):3097-3101
	28	Utschig, L.M. et al., "Mercury-199 NMR of the Metal Receptor Site in MerR and Its Protein-DNA Complex" (April 1995) Science 268:380-385
	29	Utschig, L.M. et al., "Biochemical and Spectroscopic Probes of Mercury(II) Coordination Environments in Proteins" (1993) Methods Enzymol. 226:71-97
	30	Veglia, G. et al., "The Structure of the Metal-Binding Motif GMTCAAC Is Similar in an 18-Residue Linear Peptide and the Mercury Binding Protein MerP" (March 2000) J. Am. Chem. Soc. 122(10):2389-2390
	31	Wright, J.G. et al., "Coordination Chemistry of the Hg-MerR Metalloregulatory Protein: Evidence for a Novel Tridentate Hg-Cysteine Receptor Site" (1990) J. Am. Chem. Soc. 112:2434-2435
MAI	32	Zeng, Q. et al., "The Core Metal-Recognition Domain of MerR" (1998) Biochemistry 37(45):15885-15895

EXAMINER

Medina A. Ibrahim

DATE CONSIDERED

6/10/03

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.